

What is Claimed is:

1. A method of separating a mixture of proteins in a biological sample comprising:

(a) mixing the biological sample with a solution comprising a sulfhydryl reducing agent, an anionic detergent, and at least one detergent selected from the group consisting of an ionic detergent, a non-ionic detergent and a zwitterionic detergent, at concentrations sufficient to substantially denature albumin in the mixture; and

(b) subjecting the mixture of biological sample and solution to a separation technique to separate proteins in the mixture.

2. The method of claim 1 further comprising characterizing the separated proteins.

3. The method of claim 2 wherein the separated proteins are characterized by Western blot.

4. The method of claim 1 wherein the biological sample comprises serum.

5. The method of claim 1 further comprising heating the mixture from step (a) prior to separation in step (b).

6. The method of claim 5 wherein the mixture is boiled.

7. The method of claim 1 wherein said separation technique is performed using SDS-PAGE.

8. The method of claim 1 wherein the anionic detergent is sodium dodecyl sulfate.

9. A kit for separating a mixture of proteins in a

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biological sample comprising:

- (a) a solution containing a sulfhydryl reducing agent, an anionic detergent, and at least one detergent selected from the group consisting of an ionic detergent, a non-ionic  
5 detergent and a zwitterionic detergent; and
- (b) instructions for separating proteins in said serum.

10. A method of assessing cellular injury in a subject comprising:

- (a) separating a mixture of proteins in a biological  
10 sample of the subject in accordance with the method of claim 1; and
- (b) characterizing the separated proteins, wherein said characterization is indicative of cellular injury in the subject.

15 11. The method of claim 10 wherein the separated proteins are characterized by Western blot.

12. The method of claim 10 wherein the characterized protein is at least one of troponin I and troponin T.

20 13. The method of claim 10 wherein the cells are cardiac muscle cells.

14. The method of claim 10 wherein the cells are skeletal muscle cells.

25 15. The method of claim 14 wherein the characterized proteins comprise at least one of a fast and a slow isoform of TnI.

16. A method of profiling proteins in a biological sample comprising:

- (a) separating proteins of the biological sample in

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accordance with the method of claim 1; and

(b) characterizing proteins so as to produce a profile of proteins in said biological sample.

17. The method of claim 16 wherein the separated  
5 proteins are characterized by Western blot.

18. A method for detecting myocardial damage in a subject comprising detecting a myofilament protein in serum of the subject by Western Blot-Direct Serum Analysis.

19. The method of claim 18 wherein detection of the  
10 myofilament protein in the serum of the patient provides an early clinical assessment or diagnosis of myocardial damage.

20. A method for clinically assessing or diagnosing in a subject myocardial damage prior to detection by electrocardiogram or routine clinical testing showing  
15 significant elevations of biochemical cardiac markers in the subject, said method comprising detecting by Western Blot-Direct Serum Analysis a myofilament protein in serum of the subject.

21. A method for monitoring the state of the myocardium  
20 in a subject, said method comprising monitoring myofilament protein modifications in serum of the subject by Western Blot-Direct Serum Analysis.

22. The method of claim 21 wherein monitoring is performed prior to detection by electrocardiogram or routine  
25 clinical testing showing significant elevations of biochemical cardiac markers in the subject.

23. A method for assessing severity of skeletal muscle damage in a subject comprising measuring a ratio of two

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different isoforms of a myofilament protein in serum of the subject by Western Blot-Direct Serum Analysis.

24. The method of claim 23 wherein the two different isoforms of the myofilament protein are fast and slow troponin I or fast and slow troponin T.

25. A method for diagnosing skeletal muscle damage in a subject comprising measuring a ratio of two different isoforms of a myofilament protein in serum of the subject by Western Blot-Direct Serum Analysis.

10           26. The method of claim 25 wherein the two different  
isoforms of the myofilament protein are fast and slow troponin  
I or fast and slow troponin T.

27. A method for differentially diagnosing skeletal muscle damage in a subject comprising measuring a ratio of two  
15 different isoforms of a myofilament protein in serum of the subject by Western Blot-Direct Serum Analysis.

28. The method of claim 27 wherein the two different isoforms of the myofilament protein are fast and slow troponin I or fast and slow troponin T.